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LETTERS TO THE EDITOR.

. Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

The Audubon Monument.

AUDUBON, the great naturalist, to whom this country is as much indebted as the English people are to White of Selborne for the accurate study of natural history, died in New York in 1851, and was buried in Trinity Cemetery. His family vault was in that part of the cemetery which, subsequent to the selection of the site, became 153d Street, which the city authorities have ordered to be opened. As there was danger of the vault being interfered with by the improvements consequent on the opening of the street, the trustees of the cemetery gave the family a new plot, and built a new vault at their own expense, to which his remains were removed in 1890; but no monument marks or ever has marked his grave.

In the year 1887 the New York Academy of Sciences appointed a committee, of which I was chairman, to collect funds to erect a suitable monument over his grave. Since that time the committee have labored constantly and earnestly to collect sufficient money to erect this monument, but with no very great success. A few generous responses have been received, and a number of conditional subscriptions have been made; but, counting them all together, less than half the amount necessary for the erection of the monument, the design for which was accepted by the committee, has been raised. If every appeal which has been sent out had been responded to by the contribution of five dollars, there would have been enough to erect both a monument over his grave and one in the park beside. It still remains a fact that the grave of the greatest naturalist that this city has ever produced, of whose work Cuvier said that it was "the most magnificent monument that art had ever raised to ornithology," is not distinguished by any mark of any kind, and that the committee, after four years of unremitting labor, during which they have tried every expedient known to them to induce people to subscribe, have failed to raise the amount of money which they consider necessary for a suitable monument. The committee are well aware of how many claims there are, both for the living and the dead; but this one has certainly not met with the response which it ought to have met with. The committee do not feel that they can carry on the work of collecting, which demands so much personal labor from them, over another year, and appeal earnestly to the public to support them, so that they may finish their labors during the year 1891, and erect over the remains of this great citizen of New York a monument worthy of his genius and his fame.

THOS. EGGLESTON.

New York, March 21.

The very Peculiar Tortoise, *Carettochelys* Ramsay, from New Guinea.

THROUGH the great kindness of Professor Ramsay, curator of the Australian Museum, Sydney, I have just received some photographs of the unique specimen of *Carettochelys*. From these I reach the conclusion that *Carettochelys* is an ancestral form of the *Trionychia*.

One of the photographs shows the upper and lower view of the posterior portion of the skull. The most peculiar character of this part is the enormously developed supra-occipital spine, which is spoon-shaped. The squamosals have also developed, exactly as in the *Trionychia*, large crest-like posterior processes. They do not reach so far behind as the supra-occipital spine. The whole shape of this portion of the skull is only comparable with that of the *Trionychia*. The pterygoids extend between quadrate and basi-phenoid exactly as in this group. The quadrate is not entirely closed behind, as in the *Trionychia*, but only on the outside, leaving a posterior foramen, as in the *Podocnemididae*, for instance. The articular face of the quadrate is as in the *Trionychia*, and so is the posterior end of the lower jaw. The shape of the

pterygoids is also as in the *Trionychia*, but from the photograph I cannot ascertain whether they are curved up in front, as in the *Pleurodira*, or not. There is no parieto-squamosal arch, but a post-orbital and quadrato-jugal arch is present, resembling the arrangement in the *Trionychia*. The inter-orbital space is very large, and the orbits are lateral, much as in the *Staurotypidae* and *Cinosternidae*. The bones of the head are sculptured exactly in the same way as the shell, a condition only found in the Jurassic *Compsemys plicatulus* Cope. The nose was projected in front. It would seem from the photographs that there was a distinct very small mesoplastral bone.

Unfortunately the cervicals of the unique specimens have not been preserved by the collector. The condition of the pelvis, and the number of the phalanges in the fourth digit, are not yet known. To judge from the photograph, the latter do not exceed three. But I think it already possible to draw conclusions about the relations of this peculiar form. I consider it an ancestral form of the *Trionychia*, which still preserves the peripheral bones, and which has the carapace and plastron completely closed. Further finds will show whether the cervicals are already of the *Trionychian* structure, or whether they show the condition of the *Amphichelydia* or *Pleurodira*. There are only ten peripherals on each side, as in the *Staurotypidae*, *Cinosternidae*, and the fossil *Anostira* and *Pseudotrionyx*; and I should not be surprised to hear that this form will prove to be very close to *Pseudotrionyx*. I also believe that the group containing the *Dermatemydidae*, *Chelydridae*, *Staurotypidae*, and *Cinosternidae* is related to the ancestral *Trionychia*.

Carettochelys cannot be placed in any group of living tortoises: it has to be considered as the representative of a peculiar group ancestral to the *Trionychia*, and in relation probably to the *Amphichelydia*. This group I propose to call *Carettochelydes*. I can only hope that other specimens of this ancestral tortoise may be collected soon. The only specimen now in existence has been caught in the Fly River, New Guinea, and is now in the Australian Museum, Sydney.

G. BAUR.

Clark University, Worcester, Mass., March 26.

American Box-Tortoises.

THROUGH the kindness of Mr. Gustave Kohn of New Orleans, La., I have received lately a specimen of the Southern box-tortoise, made known for the first time by L. Agassiz under the name of *Cistudo major*, which name has to be changed into *Terrapene major*.

As is well known, one of the generic characters of *Terrapene* (*Cistudo*) consists in the absence of the bony temporal arch. Three years ago I showed that in the common Eastern box-tortoise (*Terrapene carolina* L.) a rudimentary quadrato-jugal is present, connected with the quadrate, but not reaching the jugal (*Zool. Anz.*, No. 296, 1888). I was greatly surprised to find now that the *Terrapene major* Ag. has the bony temporal arch well developed, exactly as in *Clemmys* or *Cyclemys*, for instance. This condition was seen in all specimens (three) examined. The Southern box-tortoise, therefore, appears as the most primitive form of the American species. This is also shown by other characters. The scapula is more primitive, the digits are strongly webbed, and the cervicals are longer. The *Terrapene ornata* Ag., only found in the Central States, is the most specialized form. There is no trace of a quadrato-jugal. The post-orbital arch has become very slender, the two branches of the scapula are of the same length, the cervicals are very short, and there are only two phalanges in the digits of the fore-limb. *Terrapene carolina* L. is between the Southern and Central form. All these species have one or two distinct ossifications at the upper end of the scapula.

I give now the characters of the three species:—

Terrapene major Ag.—Quadrato-jugal well developed, touching jugal and quadrate; cervicals long; upper branch of scapula considerably longer than inner branch (endo-scapula); digits with greatly developed webs; number of phalanges of fore-limb, 2, 3, 3, 2; shell elongated.

Terrapene carolina L.—Quadrato-jugal rudimentary, only connected with quadrate; cervicals shorter than in *T. major*; upper

branch of scapula somewhat longer than inner branch (endo-scapula), but not so long as in *T. major*; digits not so much webbed as in *T. major*; number of phalanges of fore-limb, 2, 3, 3, 3, 2; shell not so elongated.

Terrapene ornata L.—Quadrato-jugal absent; cervicals very short; upper branch of scapula of the same length as inner branch (endo-scapula); digits without distinct web; number of phalanges of fore-limb, 2, 2, 2, 2, 2; shell rounded.

I have had no opportunity yet to examine fully *Terrapene cinosternoides* Gray (*trivialis* Ag.) and *Terrapene mexicana* Gray. *T. cinosternoides* is near *T. ornata*. It may perhaps show a rudimentary quadrato-jugal and a slight reduction in the number of the phalanges. I have only seen the two stuffed types of *Terrapene mexicana* Gray in the British Museum. They also resembled *T. ornata*. It would be very interesting to study the osteology of these forms. Besides, it is important to examine specimens from the intermediate localities, like Florida and South Carolina, to see how these forms agree with *T. major* and *T. carolina*.

I should be very much obliged to anybody who would send me specimens from different States of the country.

Terrapene is one of the plastic genera, and the examination of a great number of specimens from different localities doubtless will show some interesting results. G. BAUR.

Cla k University, Worcester, Mass., March 27.

BOOK-REVIEWS.

The Theory of Light. By THOMAS PRESTON. London and New York, Macmillan. 8°. \$3.25.

EVERY one who has attempted to look up the literature of any scientific subject knows how laborious is the search through endless volumes of the Transactions and Proceedings of learned societies and of scientific periodicals. With some branches of science it may be impossible to make a book occasionally that shall give the existing state of the science; but with physical science this is from time to time attempted, and it was the object which Professor Preston had in view in producing his "Theory of Light."

It was his hope, and we think it has been realized, to furnish an accurate and connected account of the most important optical researches, from the earliest times up to the most recent date. Complicated mathematical theories have been avoided; yet the mathematical theory, which is so essential, has, in an elementary form, as well as the experiments on which it is founded, been given in sufficient detail to enable the student who has the necessary knowledge of the higher mathematics to take up with profit the original papers recently elaborated by various English and foreign writers.

All physicists are acquainted with the important researches, carried out in the last few years by Professor Hertz, which have proved experimentally the long-suspected close connection between light and electricity, and many will be glad to find in this volume a concise account of the results of these researches.

Outlines of General Chemistry. By WILHELM OSTWALD. Tr. by James Walker, Ph.D. London and New York, Macmillan. 8°. \$3.50.

PROFESSOR OSTWALD is professor of chemistry in the University of Leipzig; and the translator of this work, Dr. Walker, is assistant in the chemical department of the university of Edinburgh. The author undertook to write a book which would meet the requirements of the student who, while not intending to devote himself to the detailed study of general chemistry, still wishes to follow intelligently the progress recently made in this important branch of science. The progress to which the author refers might be said to be that in the physics of chemistry.

The book is divided into two parts, — the first, on the chemical laws of mass; and the second, on the chemical laws of energy. In the first part we are told of what we know about mass, of the properties of gases, of the properties of liquids, of solutions, of the properties of solids, and of the theory of chemical compounds. It will be seen that nearly all these are subjects which are on the border-line between physics and chemistry; for instance, in the

chapter on the properties of liquids, the author treats of their general properties, of the relations between the gaseous and liquid states, of boiling-points, of volume relations of liquids, of refraction in liquids, of rotation of the plane of polarization, of surface tension, of internal friction, and of the specific heat of liquids. In the second part, under the general heading of "The Chemical Laws of Energy," the subjects treated are, thermo-chemistry, photo-chemistry, electro-chemistry, chemical dynamics, and chemical affinity.

The amount of progress that has been made of late years in these physico-chemical researches is considerable, and we are fortunate in having the results brought together and summarized in so good a book. The author is to be commended for having avoided one error which many a writer is induced to make. Few chemists have had much mathematical training, so that they would find it difficult or impossible to follow the mathematical discussion of physical problems. In such cases Professor Ostwald has not sought to introduce a laborious proof based on elementary mathematics, but has chosen to give simply the result.

Die Kosmologie der Babylonier. By P. JENSEN. Straasburg, 1890.

Die Fluthsagen. By RICHARD ANDREE. Braunschweig, 1891.

THE study of comparative mythology is constantly teaching us how wide spread over the earth's surface are the same infantile explanations of natural phenomena. As soon as a tribe reaches a certain stage of intellectual culture, — and that by no means a high one, — it is sure to frame some theory, under the guise of a narrative or story, to account for the existence of the world about it.

One of the most ancient, and for that reason most interesting, of these stories of creation, is that of the Babylonians, of which we have a new and very accurate rendering by Jensen. It is a part of his general work on the cosmology of the Babylonians, the whole of which is characterized by great learning and acuteness. He refutes satisfactorily the opinion of those who have maintained that the creation legend of Babylon was derived from the "Sumerian" column of the inscriptions, though their opinion would have amounted to little if Halévy's suggestion is correct, that the Sumerian script is merely an esoteric alphabet of the general Semitic language of the country.

Jensen's comparison of the Babylonian creation myth with that contained in the first part of the Book of Genesis illustrates with additional force how closely the biblical text follows the older and more detailed Euphrates myth. "In both narratives (Babylonian and biblical) the sequence of events is absolutely the same. A greater similarity would deserve the name of a translation. The Bible has taken up the Babylonian creation legends, suppressing what was specifically Babylonian, and transforming what was mythologic and polytheistic into a monotheistic form" (p. 306).

In the Babylonian legend the Creator appears as *Marduk*, who is probably a personification of the morning sun (the light-bringer), who rises over the boundless ocean (*tiamat*), conquers the chaos of night, and separates the heavens above from the earth beneath.

Jensen also supplies a more accurate translation of the Babylonian flood-myth, correcting a number of errors in Professor Haupt's rendering, and adding valuable suggestions concerning the original text. Thus, the hero of the myth, referred to by Haupt and others as *Samas-napistim* (the "Sun of Life"), is transliterated by Jensen *Sit-napistim* ("he whose life was saved"), a much more appropriate appellation. The biblical story of Noah and the Flood is, as is well known, merely a version of the Babylonian myth.

The origin, distribution, and affiliation of the flood myths all over the world are the topics discussed by the well-known ethnologist, Dr. Richard Andree, in his "Fluthsagen." It is an interesting collection of material, but scarcely up to what we might expect from so widely read an authority. The portions on America are particularly weak. He depends for the Algonquin flood myth on Squier's inaccurate reproduction of the "Walum-Olum," evidently not knowing Brinton's elaborate reproduction and translation of that unique record. Nor does he refer to the